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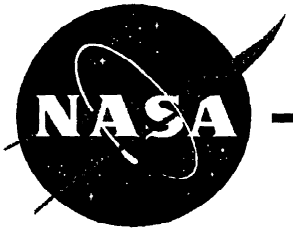
HIGH RESOLUTION DYNAMICS LIMB SOUNDER

(HIRDLS)

PRE-CALIBRATION TRAINING PLAN

EOS AURA PROJECT

JULY 2001



GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

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1.0 Introduction

1.1 Purpose

The purpose of this plan is to define the requirements for a training program that will ensure that LMSSC, OXF, UCB, and GSFC personnel are adequately trained in preparation for calibration of the HIRDLS EM and PFM Instruments.

1.2 Scope

This plan includes a definition of the timeframe, phasing, and duration of the training period, responsibilities for who will perform the training, who will receive the training, the goals and expected results of the training, and logistics information. This plan applies to both EM and PFM training.

2.0 Applicable and Information Documents

The following documents provide additional reference materials concerning instrument integration and test, instrument calibration, program schedules, and other information pertinent to preparation for pre-calibration training. The versions of the documents to be reviewed prior to training may be found on the hirdls2 and/or clas servers, or will be provided by the training coordinators, as appropriate.

EM I&T Plan (TP-LOC-243)
PFM I&T Plan (TP-LOC-204)
Pre-Launch Calibration Plan (TP-HIR-007B)
Calibration Management Plan (PM-HIR-017)
Detailed Calibration Procedures (TP-OXF-217)
Program schedules
LMSSC ESD Procedures
HIRDLS Instrument Contamination Control Plan (PA-HIR-006), Rev B, 09 Feb 00
HIRDLS - I&T PFM Cleanroom Operating Procedures (TP-LOC-316), Rev NC, 05 May 00
HIRDLS Command and Telemetry Handbook, Volumes 1, 2, and 3 (SP-HIR-103)

3.0 Training Overview

3.1 Phasing

Training will be accomplished in multiple phases to most efficiently utilize personnel and equipment. The initial phase of EM training will take place either immediately prior to shipment (Option 1 – training at LMSSC) or immediately after shipment (Option 2 – training at Oxford). The initial phase of PFM training will be held at LMSSC. Training will consist of safety and facility-related procedures (ESD and cleanroom); instruction on running basic procedures such as safe-to-mate, initialization of the instrument and IEGSE, and baseline functional and performance tests [power up, mission mode test, and Bench Acceptance Test (BAT)] using CSTOL procs; and analysis of test data.

The second training phase will be held at OXF, and will concentrate on the configuration and operation of the test chamber and test equipment to be used during calibration, and the integration of the instrument into the test environment. Facility-specific cleanliness and safety procedures will also be addressed. LMSSC will conduct the Bench Acceptance Test (BAT) and will conduct and/or direct all procedures related to instrument handling. All training related to the test facility and integration of the instrument and GSE will be conducted by OXF. Phase two training will be held during and subsequent to shipment of the instrument to OXF.

Calibration activities are described in the Calibration Management Plan. This document, along with the detailed calibration procedures developed by OXF, describe the activities and personnel support required during instrument calibration.

3.2 Personnel and Responsibilities

This section defines the responsibilities for who will conduct and attend training for each of the training phases. Phase one will be conducted by LMSSC.

Phase two training related to the calibration facility and instrument/GSE integration will be conducted by OXF. Training related to instrument handling and running of the BAT will be conducted by LMSSC.

LMSSC and OXF have each appointed a training coordinator that will act as a central point of contact for all training activities for their respective organizations. The LMSSC training coordinator is Claire Wilda. The OXF training coordinator is Chris Hepplewhite. The coordinators will interface with I&T and calibration personnel to develop the content of the training, conduct the scheduled training, and will be available for subsequent consultation and additional ad hoc training, as required.

3.3 Detailed Training Objectives

3.3.1 Phase 1 Training Activities

Phase 1 EM training will be held either at LMSSC (Option 1) or OXF (Option 2) and will consist of two parts. Phase 1 PFM training will be held at LMSSC and will consist of two parts.

Phase 1, Part 1 for both EM and PFM consists of the facility-specific cleanroom and ESD training, taking a total of approximately 6 hours. This part of the training should be based on existing LMSSC training materials and may be completed by the trainees at any time prior to the start of subsequent training activities (i.e., trainees that may be at LMSSC some weeks or months prior to the start of part 2 of the training may arrange with LMSSC to complete part 1 in advance).

Phase 1, Part 2 for both EM and PFM consists of 2 days of classroom training, including basic operation of the instrument and IEGSE and a review of the Power Up and Mission Mode STOL procedures. LMSSC trainers will provide a review of the STOL procedures supplied by the trainees (see section 4.1). Also addressed in some detail will be response to anomalies that may be encountered during calibration. SAIL and analysis tools will be identified and referenced as part of the training, but will not be covered in detail.

All trainees will be certified by the end of Phase 1, Part 2 by the LMSSC training coordinator as to their competence in performing all of the above functions. Specific certification criteria will be defined in the training materials to be developed by LMSSC, and will be accepted by the US and UK training coordinators.

LMSSC will provide a more detailed outline of all phase 1 training activities 30 days prior to the start of the training.

3.3.2 Phase 2 Training Activities

Phase 2 training will be held at OXF. Part 1 consists of the facility-specific cleanroom and ESD training to be provided by OXF personnel. The scope and content of this training will be addressed in the OXF Calibration Management Plan.

Part 2 of the activities at OXF consists of the receipt of the instrument, removal of the instrument from the shipping container, inspection and cleaning of the instrument (as necessary), and transfer of the instrument to the clean room/test facility. Participation in this activity is limited to those LMSSC and OXF personnel directly involved with the activities listed above. No formal training will be performed during this phase. Rather, "on-the-job" training of both LMSSC and OXF personnel will occur as part of the normal activities associated with receipt, unpacking, test, and integration of the EM and PFM instruments into the calibration facility. LMSSC will perform and/or direct all instrument handling and conduct of post-shipment BAT. OXF will be responsible for activities related to instrument/GSE integration. LMSSC personnel will perform the initial post-ship BAT using IEGSE #2 (EM IEGSE). OXF personnel will then perform the same test. The remainder of the post-shipment checkout activities consists of re-running the power-up and mission mode tests that were completed prior to instrument shipment. This will

initially be performed by LMSSC personnel, with subsequent re-running of the tests by OXF personnel.

3.4 Training Facilities, Locations, Equipment, Logistics

LMSSC and OXF are responsible for all on-site logistics (availability of space and personnel) to ensure that the goals of this training plan are achieved for their respective training phases.

3.5 Training Schedule

Training for EM will occur within two weeks prior to shipment (Option 1) or within two weeks after receipt at OXF (Option 2). Training for PFM will take place during the month prior to shipment and/or within two weeks after receipt.

4.0 Training Description

4.1 Student Preparation

All trainees will be responsible for reviewing the facility-specific (ESD, cleanroom) procedures and other TBD procedures to be supplied by LMSSC and OXF prior to the start of each training phase. It is recommended that personnel to be trained have a basic working knowledge of STOL (and/or the shortcut 'segmentation language' input to the STOL procedure generator) prior to the start of the phase one training period. Review of the documents listed in section 2.0 of this plan is also recommended. It is also suggested that each trainee bring with them to the start of the phase 1 training one or more completed STOL procedures that they may run and verify as part of the training exercise.

4.2 Detailed Training Procedures

All materials to be covered during each training phase will be supplied by the responsible organization to the trainees at least 14 days prior to the start of the training period. Peer review of the training materials will be accomplished at least 30 days prior to the start of each training phase.